



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
Seattle, WA 98115

Refer to:

OSB1998-0087

April 26, 1999

Fred Patron
Federal Highway Administration
The Equitable Center, Suite 100
530 Center St. NE
Salem, Oregon 97301

Re: Biological Opinion for the Haynes Inlet Slough Bridge
Replacement

Dear Mr. Patron:

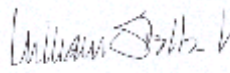
The National Marine Fisheries Service (NMFS) has enclosed the Biological Opinion (BO) that addresses your proposed project to replace the bridge at the Haynes Inlet Slough. This project is described in your Biological Assessment (BA) submitted with your request for consultation, plus in the addendum provided by Oregon Department of Transportation.

This opinion considers the potential effects of the project on Oregon coast coho salmon (*Oncorhynchus kisutch*) which occur in the proposed project area. The Oregon coast coho salmon was listed as threatened under the ESA by the NMFS (August 10, 1998, 63 FR 42587). Critical habitat has not been proposed for this species.



This opinion constitutes formal consultation for the Oregon coast coho salmon. If you have any questions regarding this letter, please contact Nancy Munn of my staff at (503) 231-6269.

Sincerely,

A handwritten signature in blue ink, appearing to read "William Stelle, Jr.", is centered below the word "Sincerely,". The signature is written in a cursive, slightly slanted style.

William Stelle, Jr.
Regional Administrator

cc: Elton Chang - FHWA
Pieter Dykman
Greg Apke - ODOT
Randy Reeve - ODFW

Endangered Species Act - Section 7 Consultation

Biological Opinion

Haynes Inlet Slough Bridge Replacement, Oregon Coast Hwy.

Agency: Federal Highway Administration

Consultation Conducted By: National Marine Fisheries Service,
Northwest Region

Date Issued: April 26, 1999

Refer to: OSB1999-0087

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I. Background

On October 5, 1998, the National Marine Fisheries Service (NMFS) received a Biological Assessment (BA) and request from Oregon Department of Transportation (ODOT) for Endangered Species Act (ESA) section 7 consultation for a bridge replacement within the Haynes Inlet Slough along the Oregon Coast. Additional information necessary for completing the consultation was provided on February 18, 1999. Oregon Department of Transportation (ODOT) is the lead agency and designated non Federal representative for transportation related actions in Oregon that are supported by funds from the Federal Highway Administration. This Biological Opinion is based on the information presented in the BA and the result of the consultation process.

ODOT has determined that the Oregon coastal coho salmon (*Oncorhynchus kisutch*) (OC coho) may occur within the project area.

ODOT is proposing to replace the existing two-lane bridge over Haynes Inlet Slough, at approximately milepoint (MP) 233 on the Oregon Coast Highway (US 101). This activity is necessary because the substructure of the current bridge is failing. Much of the bridge is on wooden pilings, many of which are split, have crushed caps, or are otherwise failing.

The effects determination was made using the methods described in *Making ESA Determinations of Effect for Individual or Grouped Actions at the Watershed Scale* (NMFS 1996), as modified to incorporate estuarine functions. ODOT determined that the proposed actions were likely to adversely affect the indicated species.

This BO reflects the results of the consultation process. The consultation process has involved correspondence and communications to obtain additional information and clarify the BA. As appropriate, modifications to the proposal to reduce impacts to the indicated species were discussed and enacted. This has included reducing the amount of riprap required along the causeway, and an alteration of the in-water work timing to minimize impacts to aquatic resources in the estuary. Riparian impacts will be minimized, and riprap areas will be planted with riparian shrubs and trees, where doing so would not impact visibility along the roadway. In-water work will be carefully monitored so that turbidity is minimized. Access to the project site will be via the causeway on the north, and a temporary construction bridge. ODOT has proposed to purchase property within the estuary and restore estuarine function at that site as mitigation for fill within the estuary.

The objective of this biological opinion is to determine whether the action to replace the Haynes Inlet Slough bridge on US 101 is likely to jeopardize the continued existence of the indicated species or destroy or adversely modify critical habitat.

II. Proposed Action

The proposed action is to replace the Haynes Inlet Slough bridge along US 101. Haynes Inlet is part of the Coos Bay Estuary in the Coos basin. This action includes removing the existing two-lane structure and replacing it to east with a wider structure to facilitate future expansion of the carrying capacity of US 101. The project is scheduled to begin construction in 1999.

US 101 crosses Haynes Inlet via a causeway on the north, and a bridge on the south. The causeway provide access to Horsfalls Road as well. The new bridge would be constructed immediately east of the existing structure, maintaining a similar alignment but requiring new fill to support additional bridge width.

The project area includes sections of US 101 from MP 232.8 to MP 233.48. The total project length is 0.68 miles. This area includes the bridge, and the southern end of the Horsefall causeway. Actual in-water work would occur at the bridge and for up to 1,640 feet along the east side of the existing causeway.

Staging

- To accommodate detour traffic during removal of the original structure and placement of the new structure, bridge removal and installation would occur in phases.
- A temporary work bridge would be needed. The work bridge would require driven steel pipe pile at fairly close intervals (50 to 65 foot spans), with at least two piles per work bridge bent. The temporary bridge would therefore require approximately 50 piles, resulting in approximately 538 square feet of tidal and subtidal habitat disturbance. Temporary work bridges may be necessary on both sides of the existing structure. None of these piles would be part of the final bridge. After construction of the final bridge, temporary piles would be extracted with a vibratory hammer. Alternatively, the contractor may stage bridge construction from a barge rather than a temporary bridge.

Bridge Removal

- The existing bridge is 770 feet long. This entire structure would be removed in stages. Removal of 168 wet timbers is required. These timbers currently cover 182 square feet of the subtidal channel and tidal flats of Haynes Inlet.
- The existing bridge has 6 concrete piers (3 on either side of the boat passage), all of which must be removed. Each pier has a footing of 18 feet by 10 feet. These 6 piers currently cover 1,125 square feet.

- Removal of piers and footings would require extensive in-water work and subtidal bed disturbance.

Bridge Installation

- The new structure will be approximately 82 feet wide. The new three-arch bridge will require two bents in the estuarine channel, two bents on the lower banks of the channel, and one bent on the south abutment slope. All bents will be pile supported. Each footing would be 40 feet transverse by 25 feet longitudinal, and two footings would be required per pier. Therefore, the total proposed fill for the new bridge (not including the causeway) would be approximately 6,456 square feet.
- The new permanent bridge bents would be concrete, and poured in place. This activity would be isolated from the surrounding water with cofferdams. Pumping of the cofferdam would be required at certain stages of construction.
- The widened bridge structure would require widening the existing causeway for approximately 1,640 feet. The majority of this length would be a “sliver fill”. The causeway widening would require placement of less than 2.5 acres of fill into estuarine areas.
- Construction access would occur via the causeway and the temporary work bridges (or barge).

Habitat Enhancement

- The action includes two types of habitat enhancement efforts:
 - 1) To enhance native shellfish recruitment areas, ODOT is currently working with ODFW in the design and establishment of recruitment and settlement areas for native shellfish in Haynes Inlet Slough.
 - 2) ODOT would participate in the restoration of a diked property located approximately 1 mile upstream from the action area. ODOT’s efforts would occur as part of a larger restoration effort planned by Ducks Unlimited within a larger valley draining to Haynes Inlet. ODOT’s participation would include acquisition of an approximately 22 acre parcel of diked habitat, and payment of an appropriate share of the total restoration cost. Approximately 12.5 acres of the restoration will be part of this action. The restoration would be mostly passive, with the replacement of an existing tidegate with a storm tidegate that would remain open except during exceptionally high tides. The tidegate cross-section would be increased to allow better tidal flushing. This site has been designed to restore wetland areas and to create habitat for salmonids, wintering waterfowl, and foraging bald eagles. The enhancement would generate off-channel and smoltification areas for coho and steelhead.

III. Biological Information and Critical Habitat

The listing status, biological information, and critical habitat elements or potential critical habitat for the indicated species are described in Table 1.

Species (Biological References)	Listing Status Reference	Critical Habitat Reference
Oregon coastal coho salmon (Weitkamp et al. 1995)	The Oregon Coast ESU is listed as threatened under the ESA by the NMFS (August 10, 1998 63 FR 42587).	Critical habitat has not been proposed for the Oregon Coast coho salmon.

Table 1. References to Federal Register Notices containing additional information concerning listing status, biological information, and critical habitat designations for listed and proposed species considered in this biological opinion.

IV. Evaluating Proposed Actions

The standards for determining jeopardy are set forth in section 7(a)(2) of the ESA as defined by 50 CFR Part 402 (the consultation regulations). NMFS must determine whether the action is likely to jeopardize the listed species and/or whether the action is likely to destroy or adversely modify critical habitat. This analysis involves the initial steps of (1) defining the biological requirements and current status of the listed species, and (2) evaluating the relevance of the environmental baseline to the species' current status.

Subsequently, NMFS evaluates whether the action is likely to jeopardize the listed species by determining if the species can be expected to survive with an adequate potential for recovery. In making this determination, NMFS must consider the estimated level of mortality attributable to: (1) collective effects of the proposed or continuing action, (2) the environmental baseline, and (3) any cumulative effects. This evaluation must take into account measures for survival and recovery specific to the listed salmon's life stages that occur beyond the action area. If NMFS finds that the action is likely to jeopardize, NMFS must identify reasonable and prudent alternatives for the action.

Furthermore, NMFS evaluates whether the action, directly or indirectly, is likely to destroy or adversely modify the listed species' designated critical habitat. The NMFS must determine whether habitat modifications appreciably diminish the value of critical habitat for both survival and recovery of the listed species. The NMFS identifies those effects of the action that impair the function of any essential element of critical habitat. The NMFS then considers whether such impairment appreciably diminishes the habitat's value for the species' survival and recovery. If NMFS concludes that the action will adversely modify critical habitat it must identify any reasonable and prudent measures available.

For the proposed action, NMFS' jeopardy analysis considers direct or indirect mortality of fish attributable to the action. NMFS' critical habitat analysis considers the extent to which the proposed action impairs the function of essential elements necessary for smoltification of the listed salmon under the existing environmental baseline.

A. *Biological Requirements*

The first step in the methods NMFS uses for applying the ESA section 7(a)(2) to listed salmon is to define the species' biological requirements that are most relevant to each consultation. NMFS also considers the current status of the listed species taking into account population size, trends, distribution and genetic diversity. To assess the current status of the listed species, NMFS starts with the determinations made in its decision to list OC coho for ESA protection and also considers new data available that is relevant to the determination (see Table 1 for references).

The relevant biological requirements are those necessary for OC coho to survive and recover to naturally reproducing population levels at which protection under the ESA would become unnecessary. Adequate population levels must safeguard the genetic diversity of the listed stock, enhance their capacity to adapt to various environmental conditions, and allow them to become self-sustaining in the natural environment.

For this consultation, the biological requirements are improved habitat characteristics that function to support successful smoltification. The current status of the OC coho, based upon their risk of extinction, has not significantly improved since the species was listed and, in some cases, their status may have worsened (see Table 1 for references).

B. *Environmental Baseline*

The biological requirements of OC coho are currently not being met under the environmental baseline. Their status is such that there must be a significant improvement in the environmental conditions they experience including the condition of any designated critical habitat (over those currently available under the environmental baseline). Any further degradation of these conditions would have a significant impact due to the amount of risk the listed salmon presently face under the environmental baseline.

The current range-wide status of the identified ESU is referenced in Table 1. The identified actions will occur throughout some of the range of OC coho. The defined action area is the area that is directly and indirectly affected. The direct effects occur at the project site and may extend upstream or downstream based on the potential for impairing fish passage, hydraulics, sediment and pollutant discharge, and the extent of riparian habitat modifications. Indirect effects may occur throughout the watershed where actions described in this opinion lead to additional activities or affect ecological functions contributing to

stream degradation. As such, the action area for the proposed activities include the immediate watershed containing the project and those areas upstream and downstream that may reasonably be affected, temporarily or in the long term. For the purposes of this opinion, the action area is defined by the Haynes Inlet watershed area downstream of the project area and extending upstream of the restoration site. Other areas of Coos Bay or the Coos River watershed are not expected to be directly or indirectly impacted.

Haynes Inlet is in the Coos Bay estuary, in the Coos River watershed. Coos Bay is the estuary created by the Coos River and 30 other minor tributaries. Coos Bay includes about 9800 acres of tidelands (50%) and submerged habitats (50%) at or below the highwater mark, and significantly more tideland resources above highwater. Coos Bay is a drowned river valley estuary, with a B-shaped cross-section. It is an aggrading system. The Coos Bay estuary may be divided into marine, upper and lower bays, riverine and slough subsystems on the basis of geographic location, salinity, and other environmental factors. Coos Bay supports some of the largest eelgrass beds in the state, over 1980 acres of undiked marshes, and diverse assemblages of aquatic invertebrates, fish and birds.

Haynes Inlet starts at approximately RM 9 in the upper bay subsystem of Coos Bay. The channel is approximately 33 feet deep and 395 feet wide within the project vicinity. Haynes Inlet Slough extends north from the project areas. It has a watershed of 6920 acres, and is drained by Larson and Palouse Creeks. Haynes Inlet Slough supports several different habitat types, including subtidal channels with unconsolidated bottoms, intertidal flats, eel grass beds, low marsh, high marsh and sandy shores.

Oregon coast coho salmon utilize the Coos Bay estuary and many of its tributaries. Larson and Palouse Creeks are some of the largest producers of coho salmon in the Coos basin. Coho juveniles use the estuary from March until June. This species uses estuarine wetlands (eel grass beds, slow water areas with complex cover and food resources) for refugia during smoltification and for cover/protection from predators. Adults also migrate through the action area on the way to spawning areas upstream.

Based on the best available information on the current status of Oregon coast coho range-wide (as referenced in Table 1); the population status, trends, and genetics; and the poor environmental baseline conditions within the action area (as described in the BA), NMFS concludes that the biological requirements of the identified ESU within the action area are not currently being met. There are extensive survey data available for coho salmon in this region. Overall, spawning escapements have declined substantially during this century. Average spawner abundance has been relatively constant since the late 1970s, but pre-harvest abundance has declined. Improvement in habitat conditions is needed to meet the biological requirements for survival and recovery of these species. Availability of high quality habitat has been a significant factor in the decline of OC coho (63 FR 42587). According to the analysis presented in the BA, the following habitat indicators are either at or not properly functioning within the action area: temperature, sediment, chemical contamination, availability of salt marsh, large

woody debris or other habitat complexity, and floodplain connectivity. Actions that do not maintain or restore properly functioning aquatic habitat conditions would be likely to jeopardize the continued existence of anadromous salmonids.

V. Analysis of Effects

A. Effects of Proposed Actions

The effects determination in this opinion was made using a method for evaluating current aquatic conditions, the environmental baseline, and predicting effects of actions on them. This process is described in the document *Making ESA Determinations of Effect for Individual or Grouped Actions at the Watershed Scale* (NMFS 1996). The effects of actions are expressed in terms of the expected effect - restore, maintain, or degrade - on aquatic habitat factors in the project area.

For each individual action covered in this opinion, the effects on aquatic habitat factors and to species considered in this opinion can be limited by utilizing construction methods and approaches that are intended to minimize impacts. The effects of the proposed project have been evaluated based on the application of the ODOT's *General Minimization and Avoidance Measures* which are included as terms and conditions of the incidental take statement. Of particular importance are the in-water work timing of the actions (a modification of the preferred in-water work period as established by Oregon Department of Fish and Wildlife); implementing erosion control; limiting disturbance of riparian area, stream bank and bed; maintaining fish passage during construction; and minimizing direct discharge of sediments or pollutants into the stream.

For each of the project actions, the NMFS expects that the effects of the project actions will tend to maintain or restore each of the habitat elements over the long-term, greater than one year. In the short term, temporary increase of sediments and turbidity and disturbance of riparian and estuarine habitat is expected. Fish may be temporarily displaced during the in-water work (driving and extraction of piles). There is also a slightly increased risk of a fuel oil spill into the action area during construction.

In the long term, localized changes to habitat and hydrology is expected. Estuarine habitat will be permanently lost as result of the new bridge footings and wider causeway. Plantings in the riparian area will stabilize the slopes and return function. Restoration of estuarine habitat from diked pasture land upstream of the bridge will result in a net increase in habitat for coho salmon. The potential effects from the sum total of proposed actions are expected to restore or maintain properly functioning stream and estuarine conditions within the action area.

Specific effect:

- In-water work within the estuary could result in a take of OC coho. Extensive in-water work would be required for widening the existing causeway, removal and installation of a large bridge with multiple bents, concrete pouring, and diversion of water around the work area. The construction of the temporary work bridge could displace fish during the driving and extraction of piles. The use of a barge for staging construction (if used instead of the work bridge) could also displace fish.
- Approximately 2.5 acres of estuarine habitat will be permanently removed by the widening of the causeway. Another 0.15 ac will be permanently lost due to the new bridge footings, and 0.01 acres will be temporarily lost for the piles for the temporary construction bridge. Approximately 12.5 acres of estuarine restoration is proposed to mitigate for the loss of this habitat. The mitigation would restore diked, upland habitat into salt marsh.
- Approximately 2,690 square feet of riparian habitat will be impacted by the construction of the new bridge. The impact area will be replanted with willows to reestablish riparian vegetation. Another 8,070 square feet of riparian/upland bank habitat will also be impacted; plantings will be done in the bridge removal area as mitigation.
- Moderate sediment inputs to the slough is likely. However, this system is silty by nature and turbidity levels should not be significantly above ambient with the incorporation of conservation measures.
- There is a slightly increased risk of a fuel oil spill into the action area during construction. Measures described in the terms and conditions of the incidental take statement minimize the risk.

B. Effects on Critical Habitat

NMFS designates critical habitat based on physical and biological features that are essential to the listed species. Essential features for designated critical habitat include substrate, water quality, water quantity, water temperature, food, riparian vegetation, access, water velocity, space and safe passage. Critical habitat has not been designated for the OC coho; however, it is likely to include the stream, bottom and water, and adjacent riparian zone within 300 feet of ordinary high water within the defined geographic extent. For each of the proposed actions, NMFS expects that the effects will tend to maintain or restore properly functioning conditions in the watershed under current baseline conditions over the long term. The proposed actions will affect critical habitat. In the short term temporary increase of sediments and turbidity and disturbance of riparian habitat is expected. In the long term, no loss of estuarine habitat will occur. NMFS does not expect that these actions will diminish the value of the habitat for survival of OC coho.

C. Cumulative Effects

Cumulative effects are defined in 50 CFR 402.02 as "those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation." For the purposes of this analysis, the general action area is the watersheds containing the project. Future Federal actions, including the ongoing operation of hydropower systems, hatcheries, fisheries, and land management activities are being (or have been) reviewed through separate section 7 consultation processes.

A wide variety of actions occur within the watersheds defined within the BO. NMFS is not aware of any significant change in such non-Federal activities that are reasonably certain to occur. NMFS assumes that future private and State actions will continue at similar intensities as in recent years.

VI. Conclusion

NMFS has determined based on the available information, that the proposed actions are expected to restore or maintain properly functioning stream and estuarine conditions within the action area. Consequently, the proposed actions covered in this opinion are not likely to jeopardize the continued existence of Oregon coast coho salmon. NMFS used the best available scientific and commercial data to apply its jeopardy analysis, when analyzing the effects of the proposed action on the biological requirements of the species relative to the environmental baseline, together with cumulative effects. NMFS applied its evaluation methodology (NMFS 1996) to the proposed action and found that it would cause minor, short-term adverse degradation of anadromous salmonid habitat due to sediment impacts, in-water construction, and habitat loss. These effects will be balanced in the long-term through the proposed mitigation. Direct mortality from this project may occur during the in-water work..

VIII. Conservation Recommendations

Section 7 (a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the threatened and endangered species. Conservation recommendations are discretionary measures suggested to minimize or avoid adverse effects of a proposed action on listed species, to minimize or avoid adverse modification of critical habitat, or to develop additional information. In addition to those general minimization and avoidance measures as described in the biological assessment, the NMFS requests monitoring of the restoration site to determine whether salmonids use the site.

In order for NMFS to be kept informed of actions minimizing or avoiding adverse effects, or those that benefit listed species or their habitat, NMFS requests notification of the implementation of any conservation recommendations.

IX. Reinitiation of Consultation

Consultation must be reinitiated if: the amount or extent of taking specified in the Incidental Take Statement is exceeded, or is expected to be exceeded; new information reveals effects of the action may affect listed species in a way not previously considered; the action is modified in a way that causes an effect on listed species that was not previously considered; or, a new species is listed or critical habitat is designated that may be affected by the action (50 CFR 402.16). To re-initiate consultation, ODOT must contact the Habitat Conservation Division (Oregon Branch Office) of NMFS.

X. References

Section 7(a)(2) of the ESA requires biological opinions to be based on "the best scientific and commercial data available." This section identifies the data used in developing this opinion.

DEQ 1996. 303d List of Water Quality Limited Streams, as Required Under the Clean Water Act. Oregon Department of Environmental Quality (DEQ), Portland, Or. 1996.
(www.deq.state.or.us/wq/303dlist/303dpage.htm).

DEQ 1998. Draft 303d List of Water Quality Limited Streams, as Required Under the Clean Water Act. Oregon Department of Environmental Quality (DEQ), Portland, Or. 1998.
(www.deq.state.or.us/wq/303dlist/303dpage.htm).

DSL 1996. Essential Indigenous Salmonid Habitat, Designated Areas, (OAR 141-102-030). Oregon Division of State Lands. Portland, Or. 1996.

NMFS (National Marine Fisheries Service) 1996. Making Endangered Species Act determinations of effect for individual and grouped actions at the watershed scale. Habitat Conservation Program, Portland, Oregon.

ODFW 1996. Database -- Salmonid Distribution and Habitat Utilization, Arc/Info GIS coverages. Portland, Or. 1996. (rainbow.dfw.state.or.us/ftp/).

Weitkamp, L.A., T.C. Wainwright, G.J. Brant, G.B. Miller, D.J. Teel, R.G. Kope, and R.S. Waples. 1995. Status Review of Coho Salmon from Washington, Oregon, and California. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-NFWWC-24, 258 p.

XI. Incidental Take Statement

Sections 4 (d) and 9 of the ESA prohibit any taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct) of listed species without a specific permit or exemption. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, and sheltering. Harass is defined as actions that create the likelihood of injuring listed species to such an extent as to significantly alter normal behavior patterns which include, but are not limited to, breeding, feeding, and sheltering. Incidental take is take of listed animal species that results from, but is not the purpose of, the Federal agency or the applicant carrying out an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to, and not intended as part of, the agency action is not considered prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement.

An incidental take statement specifies the impact of any incidental taking of endangered or threatened species. It also provides reasonable and prudent measures that are necessary to minimize impacts and sets forth terms and conditions with which the action agency must comply in order to implement the reasonable and prudent measures.

A. *Amount or Extent of the Take*

The NMFS anticipates that the action covered by this Biological Opinion has more than a negligible likelihood of resulting in incidental take of Oregon coast coho salmon because of detrimental effects from increased sediment levels (non-lethal) and the potential for direct incidental take during in-water work (lethal and non-lethal). Effects of actions such as these are largely unquantifiable in the short term, and are not expected to be measurable as long-term effects on coho habitat or population levels. Therefore, even though NMFS expects some low level incidental take to occur due to the actions covered by this Biological Opinion, the best scientific and commercial data available are not sufficient to enable NMFS to estimate a specific amount of incidental take to the species itself. In instances such as these, the NMFS designates the expected level of take as "unquantifiable." Based on the information in the biological report, NMFS anticipates that an unquantifiable amount of incidental take could occur as a result of the actions covered by this Biological Opinion. The extent of the take is limited to within 500 feet of project activities.

B. *Reasonable and Prudent Measures*

The NMFS believes that the following reasonable and prudent measures are necessary and appropriate to minimizing take of the above species.

1. Actions must be taken to minimize the amount and extent of incidental take during in-water work.
2. Effective erosion control and revegetation actions be taken on site to minimize fine sediment input in the stream over the long term.
3. Hazardous materials must be handled in such a way that minimizes the risk to aquatic and riparian habitats.
4. The extent of riparian impacts must be minimized, and plantings must occur that mitigate for the lost function provided by the trees and shrubs removed by the construction.
5. All plantings and mitigation sites must be monitored and meet criteria as described below in the terms and conditions.

C. *Terms and Conditions*

In order to be exempt from the prohibitions of section 9 of the ESA, ODOT must comply with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary.

1. The site will be inspected one year after the completion of the action to assess the results of erosion control measures and restoration of the salt marsh, and a report documenting the conditions will be prepared and provided to NMFS (Oregon Branch) for review.
2. Based on the results of the assessment and a determination that erosion control and/or revegetation of the riparian habitat are not effective as compared to undisturbed adjacent areas, additional actions will be taken as necessary and in agreement with NMFS to rectify the situation.

General Minimization and Avoidance Measures

3. In-water Work
 - Passage shall be provided for both adult and juvenile forms of all salmonid species throughout the construction period. ODOT designs will ensure passage of fishes as per ORS 498.268 and ORS 509.605.
- C All work within the active channel of all anadromous fish-bearing systems, or in systems which could potentially contribute sediment or toxicants to downstream fish-bearing systems, will be completed within ODFW's in-water work period. This in-water work period varies by system.¹ Any extensions of the in-water work period will first be approved by and coordinated with ODFW.

¹Many non-estuarine systems have an in-water work period during the driest portions of the year.

- C During ODOT project design, ODOT will work to minimize the amount of riprap used. In unshaded areas above the 5-year floodplain which are not scour-critical, ODOT will attempt to use biological bank control, or to backfill with native soil and plant with willow and other riparian species. This installation will increase riparian shading and cover. Where riprap is necessary, only clean, non-erodible, upland angular rock of sufficient size for long-term bank armoring will be employed.
- C Alteration or disturbance of stream banks and existing riparian vegetation will be minimized. Where bank work is necessary, bank protection material shall be placed to maintain normal waterway configuration. Waterway bank slopes will be left no steeper than 1:2.
- C In areas with riprap installation, larger riprap (class 350 metric minimum) will be used preferentially within the 2-year floodplain of systems, where this riprap would come into contact with actively flowing water, and where using larger riprap would not constrict the size of the active channel (larger rock sizes create larger interstitial spaces for juvenile salmonids). Placement will be performed "in the dry" as much as possible, and from the top of the bank where possible. Riprap areas will be planted with willow stakes (and other riparian shrubs/ trees) to increase shading and cover within the 10-year floodplain, where appropriate. Willow stakings will be of a species appropriate for the physiographic province and will be planted at an approximate density of 2000/ ha (generally).

4. Erosion Control

For all projects with the potential to contribute sediment to aquatic resources, an Erosion Control Plan (ECP) will be prepared by ODOT's Erosion Control Team and implemented by the Contractor. The ECP will outline how and to what specifications various erosion control devices will be installed to meet water quality standards, and will provide a specific inspection protocol and time response. Erosion control measures will be sufficient to ensure that turbidity does not exceed 10% above ambient (background) conditions.

- C Erosion Control measures shall include (but not be limited to) the following:
 - , Sediment detention measures such as placement of weed-free straw bales and silt fences at the bottom of newly-constructed slopes.
 - , Construction of sediment settling basins where appropriate. Berms shall be constructed where appropriate, to divert runoff into these basins.
 - , Temporary plastic sheeting for immediate protection of open areas (where seeding/ mulching are not appropriate).

- , Erosion control blankets or heavy duty matting (e.g., jute) may be used on steep unstable slopes.
 - , Sills or barriers may be placed in drainage ditches along cut slopes and on steep grades to trap sediment and prevent scouring of the ditches. The barriers will be constructed from rock and straw bales.
 - , Biobags, weed-free straw bales and loose straw may be used for temporary erosion control. Temporary erosion and sediment controls will be used on all exposed slopes during any hiatus in work on exposed slopes.
- C Effective erosion control measures shall be in-place at all times during the contract. Construction within the 5-year floodplain will not begin until all temporary erosion controls (e.g., straw bales, silt fences) are in-place, downslope of project activities within the riparian area. Erosion control structures will be maintained throughout the life of the contract.
- C All temporarily-exposed areas will be seeded and mulched. Erosion control seeding and mulching, and placement of erosion control blankets and mats (if applicable) will be completed on all areas of bare soil within 7 days of exposure within 30 meters of waterways, wetlands or other sensitive areas, and in all areas during the wet season (after October 1). All other areas will be stabilized within 14 days of exposure. Efforts will be made to cover exposed areas as soon as possible after exposure.
- C All erosion control devices will be inspected during construction to ensure that they are working adequately. Erosion control devices will be inspected daily during the rainy season, weekly during the dry season, monthly on inactive sites. Work crews will be mobilized to make immediate repairs to the erosion controls, or to install erosion controls during working and off-hours. Should a control measure not function effectively, the control measure will be immediately repaired or replaced. Additional controls will be installed as necessary.
- C If soil erosion and sediment resulting from construction activities is not effectively controlled, the Engineer will limit the amount of disturbed area to that which can be adequately controlled.
- C Sediment will be removed from sediment controls once it has reached 1/3 of the exposed height of the control. Whenever straw bales are used, they will be staked and dug into the ground 12 cm. Catch basins shall be maintained so that no more than 15 cm of sediment depth accumulates within traps or sumps.

- Where feasible, sediment-laden water created by construction activity shall be filtered before it leaves the right-of-way or enters an aquatic resource area. Silt fences or other detention methods will be installed as close as possible to culvert outlets to reduce the amount of sediment entering aquatic systems.
- C A supply of erosion control materials (e.g., straw bales and clean straw mulch) will be kept on hand to cover small sites that may become bare and to respond to sediment emergencies.
- C All equipment that is used for instream work will be cleaned prior to entering the two-year floodplain. External oil and grease will be removed, along with dirt and mud. Untreated wash and rinse water will not be discharged into streams and rivers without adequate treatment.
- C On cut slopes steeper than 1:2 a tackified seed mulch will be used so that the seed does not wash away before germination and rooting occurs. In steep locations, a hydro-mulch will be applied at 1.5 times the rate.
- C Material removed during excavation shall only be placed in locations where it cannot enter sensitive aquatic resources. Conservation of topsoil (removal, storage and reuse) will be employed.
- C Measures will be taken to prevent construction debris from falling into any aquatic resource. Any material that falls into a stream during construction operations will be removed in a manner that has a minimum impact on the streambed and water quality.
- 5. Hazmat
- C ODOT actions will follow all provisions of the Clean Water Act (40 CFR Subchapter D) and DEQ's provisions for maintenance of water quality standards not to be exceeded within the Rogue Basin (OAR Chapter 340, Division 41). Toxic substances shall not be introduced above natural background levels in waters of the state in amounts which may be harmful to aquatic life. Any turbidity caused by this project shall not exceed DEQ water quality standards.
- C The Contractor will develop an adequate, site-specific Spill Prevention and Countermeasure or Pollution Control Plan (PCP), and is responsible for containment and removal of any toxicants released. The Contractor will be monitored by the ODOT Engineer to ensure compliance with this PCP. Sediment releases greater than 10% above background levels will not be acceptable. No toxicants, including green concrete will be allowed to enter any aquatic resource.
- C No toxicant (including petroleum products) will be stored or transferred within 50 m (165 feet) of any waterbody. Areas for fuel storage, refueling and servicing of construction equipment and vehicles will be located at least 50 m away from any waterbody.

- C Hazmat booms will be installed in all aquatic systems where:
 - a) Significant in-water work will occur, or where significant work occurs within the 5-year floodplain of the system, or where sediment/toxicant spills are possible.
 - b) The aquatic system can support a boom setup (i.e. the creek is large enough, low-moderate gradient).
 - c) A significant aquatic resource occurs downstream or within the project area.²
- C Hazmat booms will be maintained on-site in locations where "Diapering" of vehicles to catch any toxicants (oils, greases, brake fluid) will be mandated when the vehicles have any potential to contribute toxic materials into aquatic systems.
- C No surface application of nitrogen fertilizer will be used within 15.2 meters (50 feet) of any aquatic resource.
- 6. Riparian issues
 - C Where appropriate, boundaries of the clearing limits will be flagged by the project inspector of ODOT. Ground will not be disturbed beyond the flagged boundary.
 - C Alteration of native vegetation will be minimized. Where possible, native vegetation will be clipped by hand so that roots are left intact. This will reduce erosion while still allowing room to work. No protection will be made of invasive exotic species (e.g. Himalayan blackberry)
 - C All exposed areas greater than 100 m² within the riparian corridor will have a replanting plan which is appropriate for the local overstory/understory plant community. The replanting plan will emphasize endemic riparian species.
 - C Riparian overstory vegetation removed will have a replacement rate of 1.5:1. Replacement will occur within the project vicinity where possible and within the watershed at a minimum.
 - C ODOT will require a contract grow period for all riparian mitigation plantings. In extremely unstable or unproductive areas, ODOT may release the Contractor from the contract grow period and develop a larger replanting area to compensate for this.

²Significant aquatic resources may include estuaries, spawning areas, or rearing areas.

7. Monitoring

- C All significant riparian replant areas, streambank and channel restoration/enhancement actions, and off-channel mitigation sites will be monitored to insure the following:
 - a) Finished grade slopes and elevations will perform the appropriate role for which they were designed.
 - b) Log and rock structures are placed appropriately and adequately secured.
 - c) Plantings are performed correctly and have an adequate success rate.
- C Mitigation site monitoring will ensure that mitigation commitments have an adequate success rate to replace the functions they were designed to replace. ODOT Biology staff will produce post-construction and biannual reports on success of mitigation sites, available on request.
- C Failed plantings and structures will be replaced, if replacement would potentially succeed. In cases of failed design, mitigation will generally be sought on another project, in a more appropriate location.
- C ODOT will require a contract grow period for all riparian mitigation plantings. In extremely unstable or unproductive areas, ODOT may release the contractor from the contract grow period and develop a larger replanting area to compensate for this.